IN THE CLAIMS:

Claim 1 (currently amended): A method of operating a fuel cell, said fuel cell comprising a cathode, an anode, and **[an] a solid polymer** electrolyte, said method comprising supplying a fuel stream comprising dimethyl ether to said anode wherein dimethyl ether is directly oxidized at said anode.

Claim 2 (original): The method of claim 1 wherein the operating temperature of said fuel cell is less than about 200°C.

Claim 3 (original): The method of claim 2 wherein said fuel cell is a solid polymer fuel cell and said electrolyte comprises a proton exchange membrane.

Claim 4 (original): The method of claim 3 wherein said fuel stream is a liquid.

Claim 5 (original): The method of claim 4 wherein said liquid fuel stream additionally comprises water.

Claim 6 (original): The method of claim 5 wherein said liquid fuel stream comprises greater than about 1.5 moles of dimethyl ether per liter of water.

Claim 7 (original): The method of claim 5 wherein said liquid fuel stream comprises an additional fuel.

Claim 8 (original): The method of claim 7 wherein said additional fuel is methanol.

Claim 9 (original): The method of claim 8 wherein said liquid fuel stream comprises greater than about 0.1 mole of dimethyl ether per liter of water.

Claim 10 (original): The method of claim 1 wherein said fuel stream is supplied to said anode at a pressure greater than about 4 bar absolute.

Claim 11 (original): The method of claim 1 wherein said anode comprises a platinum ruthenium alloy catalyst.

Claim 12 (original): The method of claim 1 wherein the oxidant stream supplied to said cathode at a pressure less than about 3 bar absolute.

Claim 13 (original): The method of claim 1 wherein the stoichiometry of the oxidant stream supplied to said cathode is less than about 1.6.

Claim 14 (original): The method of claim 1 wherein the fuel cell is operated at a current density of less than about 300 mA/cm^2.

Claim 15 (original): The method of claim 1 comprising recirculating unreacted dimethyl ether from the anode exhaust of said fuel cell into said fuel stream.

Claim 16 (original): The method of claim 1 comprising recirculating unreacted dimethyl ether from the cathode exhaust of said fuel cell into said fuel stream.

Claim 17 (original): The method of claim 15 wherein the recirculating comprises separating unreacted dimethyl ether from the anode exhaust by pressure swing absorption, water absorption, or membrane separation.

Claim 18 (original): The method of claim 16 wherein the recirculating comprises separating unreacted dimethyl ether from the cathode exhaust by pressure swing absorption, water absorption, or membrane separation.

Claim 19 (original): The method of claim 1 comprising introducing dimethyl ether into said cathode before shut down whereby freezing of the cathode during shutdown is prevented.

Claim 20 (original): The method of claim 1 comprising varying the composition of said fuel stream supplied to said anode during the operating of said fuel cell.

Claim 21 (original): The method of claim 20 wherein the composition varies in accordance with a fuel cell operating parameter.

Claim 22 (currently amended): A fuel cell system comprising a fuel cell **and a fuel stream supply comprising dimethyl ether**, said fuel cell comprising a cathode, an anode, and **[an]** **a solid polymer** electrolyte, wherein said anode is fluidly connected to directly oxidize dimethyl ether in **[a]** **said** fuel stream supply comprising dimethyl ether.

Claim 23 (original): The fuel cell system of claim 22 wherein said fuel cell is a solid polymer fuel cell and said electrolyte comprises a proton exchange membrane.

Claim 24 (original): The fuel cell system of claim 23 wherein said fuel stream is a liquid stream and said fuel cell is a liquid feed solid polymer fuel cell.

Claim 25 (original): The fuel cell system of claim 24 wherein said fuel stream comprises water.

Claim 26 (original): The fuel cell system of claim 25 wherein said fuel stream comprises an additional fuel.

Claim 27 (original): The fuel cell system of claim 26 wherein said additional fuel is methanol.

Claim 28 (original): The fuel cell system of claim 25 wherein said system comprises:
a mixing apparatus for providing said fuel stream for said fuel cell, said anode fluidly connected to a mixing apparatus outlet; and
supplies of dimethyl ether and water fluidly connected to mixing apparatus inlets.

Claim 29 (original): The fuel cell system of claim 27 wherein said system comprises:
a mixing apparatus for providing said fuel stream for said fuel cell, said anode fluidly connected to a mixing apparatus outlet; and
supplies of dimethyl ether, water, and methanol fluidly connected to mixing apparatus inlets.

Claim 30 (original): The fuel cell system of claim 28 wherein said system comprises a recirculation loop fluidly connecting an electrode exhaust of said fuel cell to a mixing apparatus inlet.

Claim 31 (original): The fuel cell system of claim 30 wherein said recirculation loop comprises a heat exchanger.

Claim 32 (original): The fuel cell system of claim 30 wherein said recirculation loop comprises a

pressure swing absorption, water absorption, or membrane separation apparatus.

Claim 33 (original): The fuel cell system of claim 30 wherein said recirculation loop fluidly connects the cathode exhaust of said fuel cell to a mixing apparatus inlet.

Claim 34 (original): The fuel cell system of claim 30 wherein said recirculation loop fluidly connects the anode exhaust of said fuel cell to a mixing apparatus inlet.